Preliminary Economic Impact Assessment of ARB's Draft Air Cleaner Regulation

AB 2276 Workshop

California Air Resources Board

Sacramento, CA

June 11, 2007

Economic Impact Assessment

- Required as part of ARB's Statement of Reasons and Staff Report
- Costs to businesses (initial and ongoing)
- Job creation/loss, CA competitiveness, business creation/loss
- Cost to consumers, and government

Today's Topics

- Certification Costs
  - Number of Models to be Certified
  - Cost per Model
  - Cost per Manufacturer
  - Impact on Manufacturers' Profits
  - Cost to All Manufacturers
- Cost to Consumers

Categories of Air Cleaner Models

- Ozone Generators (OG)
  - Intentionally produce ozone
- By Product (BP) Devices
  - Produce ozone as a by-product of their air cleaning technology
  - BP High Emitter Devices:
    BP devices that produce ozone emission concentrations near or above the UL 867 standard
- Mechanical Devices (M)
  - Filtration with physical barrier, non-electronic techniques; *de minimis* ozone emissions

Number of Models to be Certified: *Data Sources and Assumptions*

- "Model" definition
  - Model group: unit has the same ozone emission performance
  - Excluded cosmetic differences and older models
  - Brands by same mfr. considered separate models
- Manufacturer information on number of models, sales, costs, and jobs
  - Few responses to ARB market survey
  - ARB list of OGs
  - UC Berkeley portable air cleaner survey
  - AHAM's CADR directory and mfr. websites

Number of Models per Manufacturer

- Small Share of CA Market
  - 10 - 22 mfrs per category
  - Typically 3 models per mfr
- Large Share of CA Market
  - 2 - 4 mfrs per category
  - Typically 6 - 8 models per mfr

Number of Models to be Certified: *Preliminary Estimates*

A Type of Air Cleaner	B # of Mfrs	C Average # of Models per Mfr	D Total # of Models (B X C)
OG: Small Share	10	3	30
OG: Large Share	2	6	12
			42
BP: Small Share	22	3	66
BP: Large Share	4	7	28
			94
M: Small Share	21	3	63
M: Large Share	2	8	16
			79

Certification Cost per Model: *Data Sources & Assumptions*

- **Redesign Costs per Model:**
  - All Ozone Generators (OG): $20,000
  - BP High Emitters (20%): $10,000
  - BP Low-Emitters (80%) and Mechanical (M): $0
- **Labeling Costs per Model**
  - $17,500 for OG's; range of $5,000 - $30,000
  - $10,000 for all others; range of $5,000 - $15,000

Certification Cost per Model: *Data Sources & Assumptions, cont.*

- **Testing Costs per Model**
  - **OGs:**
    2 Pre-tests @ $2,000 + 1 Final UL test @ $10,000
    = $14,000
  - **BP High Emitters (20%):**
    1 Pre-test @ $2,000 + 1 Final UL tests @ $10,000
    = $12,000
  - **BP Low Emitters (80%):**
    1 Final UL test @ $10,000
    = $10,000
  - **Mechanical (M): UL 507 certification = $4,500**

Data Sources & Assumptions, cont.

- **Initial Costs, Years 1 - 5**
  - Costs for redesign, testing, and labeling
  - Annualized over Years 1-5, at a 5% discount rate
- **Model Turnover (ongoing cost), Years 2 - 5:**
  - 10% of all models are replaced each year
  - Only testing and labeling would be new costs
- **Total Cost, Years 1 - 5**
  - Sum of annualized initial costs (over 5 years) plus model turnover costs (over 4 years)

Initial Costs per Model: *Preliminary Estimates*

A Year 1 Redesign Cost ($/model)	B Year 1 UL Testing ($/model)	C Year 1 Labeling ($/model)	D Total Initial Cost ($/model) (A+B+C)	E Years 1-5, Annualized Initial Cost ($/yr)
OG				
20,000	14,000	17,500	51,500	11,900
BP High Emitter				
10,000	12,000	10,000	32,000	7,400
BP Low Emitter				
NA	10,000	10,000	20,000	4,600
Mechanical				
NA	4,500	10,000	14,500	3,300

Typical Cost per Model: *Preliminary Estimates*

A Type of Air Cleaner	B Years 1-5, Annualized Initial Cost ($/yr)	C Years 2-5 Model Turnover Costs ($/yr)	D Years 1-5 Total Costs ($), (5B+4C)
OG	11,900	3,200	72,300
BP-High	7,400	2,200	45,800
BP-Low	4,600	2,000	31,000
Mechanical	3,300	1,500	22,500

Typical Costs per Manufacturer: *Preliminary Estimates*

A Type of Air Cleaner, by Share Size	B Year 1-5 Total Cost per Model ($)	C Avg. # of Models per Mfr	D Years 1-5 Avg. Cost per Mfr ($), (BxC) *	E Annual Avg. Cost per Mfr ($/yr), (D/5)
OG: Small	72,300	3	217,000	43,400
OG: Large	72,300	6	434,000	86,800
BP-High: Small	45,800	3	137,000	27,400
BP-High: Large	45,800	7	321,000	64,200
BP-Low: Small	31,000	3	93,000	18,600
BP-Low: Large	31,000	7	217,000	43,400
M: Small	22,500	3	68,000	13,600
M: Large	22,500	8	180,000	36,000

* Rounded to nearest 1,000.

Impact on Manufacturer's Profits: *Data and Assumptions*

- No available California data on sales or profits by type of portable air cleaner
- Assumptions: Annual U.S. sales
  - $500,000 for Small Share manufacturers
  - $50,000,000 for Large Share manufacturers; includes all products sold
- Assumption: profit margins of 50%
  - Reported profit margins of 40 - 60%; might be added to the cost increase due to regulation
- 10% decrease in profits is considered significant by ARB

Impact on Manufacturer's Profits: *Preliminary Estimates*

A Type of Air Cleaner	B Annual U.S. Sales per Mfr ($/yr)	C Annual Profits per Mfr ($/yr) (0.5 x B)	D Increase in Avg. Annual Cost per Mfr ($/yr)	E % Loss in Profits (D/C)
OG: Small	500,000	250,000	43,400	17.4
OG: Large	50,000,000	25,000,000	86,800	0.3
BP Hi: Small	500,000	250,000	27,400	11.0
BP Hi: Large	50,000,000	25,000,000	64,200	0.3
BP Lo: Small	500,000	250,000	18,600	7.4
BP Lo: Large	50,000,000	25,000,000	43,400	0.2
Mech: Small	500,000	250,000	13,600	5.4
Mech: Large	50,000,000	25,000,000	36,000	0.1

Cost to All Manufacturers: *Preliminary Estimates*

A Type of Air Cleaner	B # of Models to Be Certified	C Year 1-5 Total Cost per Model ($)	D Year 1-5 Total Costs ($), (BxC)	E Year 1-5 Average Costs ($/yr), [D / 5)
OG	42	72,300	3,036,600	607,300
BP High Emitter	19	45,800	870,200	174,000
BP Low Emitter	75	31,000	2,325,000	465,000
Mechanical	79	22,500	1,777,500	355,500
Total Industry Costs *			8,000,000	1,600,000

* Rounded to nearest 100,000.

Cost to Consumers: *Preliminary Estimates*

A Type of Air Cleaner [1]	B Avg. # of Units Sold in CA (units/yr) [2]	C Avg. Increase in Mfr. Cost ($/yr) [3]	D Avg. Price Increase ($/unit), (C/B)
OG	55,600	911,000	16
BP	74,400	957,600	13
Mechanical	49,900	533,300	11

1. Combined Small and Large Share groups, and BP High and Low Emitter groups.
2. Based on household purchase data from UCB air cleaner survey, 2003-2006.
3. Cost to Manufacturer (Previous table, Column E) plus 50% markup.

Cost to Consumers, cont.: *Preliminary Estimates*

A Type of Air Cleaner	B Median Retail Price ($/unit) [1]	C Avg. Price Increase ($/unit) [2]	D % Increase in Retail Price (100xC/B)
OG	300	16	5
BP	250	13	5
Mechanical	90	11	12

1. Based on household purchase data from UCB air cleaner survey, 2003-2006 data.
2. From Previous table, Column D.

CONCLUSIONS

- Preliminary results indicate that the potential economic impacts for most manufacturers are estimated to be insignificant, except for some smaller manufacturers over the short-term.
- Minimal impacts expected on consumer prices
- The draft economic impact analysis will be posted on June 14, 2007.
- Please submit comments by June 29, 2007 to aircleaners@listserv.arb.ca.gov.